17th Annual Conference on Fossil Energy Materials

April 22-24, 2003

Wyndham Baltimore Inner Harbor
Baltimore, Maryland

Agenda

TUESDAY, APRIL 22

12:00 pm **Registration**

1:00 pm Welcome and Introductory Remarks, *R.R. Romanosky,* U.S. Department of Energy, National Energy Technology Laboratory, and *R.R. Judkins,* Oak Ridge National Laboratory

SESSION I – NEW ALLOYS

— MATERIALS FOR ADVANCED STEAM CYCLES

1:20 pm Introductory Remarks

1:30 pm *Materials for USC Steam Conditions-Update on the DOE-EIO Consortium Program,* R. Viswanathan, EPRI

2:00 pm *Coal Ash Corrosion Resistant Materials Testing Program - Evaluation of the First Ection Remove in November 2001,* D. McDonald, The Babcock & Wilcox Company

2:30 pm *Understanding Damage Mechanisms in Ferritic Steels,* R.W. Swindeman, Oak Ridge National Laboratory

3:00 pm Break

3:30 pm *Materials for USC Steam Turbines,* P.J. Maziasz, Oak Ridge National Laboratory, and C.P. Dôgan, Albany Research Center

4:00 pm *Fireside Corrosion of Alloys for USC Plants,* K. Natesan, Argonne National Laboratory

4:30 pm Invited Speaker: *De-Sulfurization of Coal,* D.A. Berry, U.S. Department of Energy, National Energy Technology Laboratory

5:00 pm Adjourn

6:00 - 7:30 Reception and Poster Session

WEDNESDAY, APRIL 23

7:30 am Continental Breakfast

SESSION I – NEW ALLOYS (CONTINUED)

— MATERIALS FOR ADVANCED HEAT EXCHANGERS

8:20 am Introductory Remarks

8:30 am Invited Speaker: *Materials Issues in Biomass-Fired Energy Systems,* J.E. Oakey, Cranfield University

Wednesday, April 23

9:00 am *ODS Alloy Development*, I.G. Wright, Oak Ridge National Laboratory

9:30 am *Optimization of ODS Alloy Properties*, B. Kad, University of California at San Diego

10:00 am *Reduction in Defect Content in ODS Alloys*, A.R. Jones, University of Liverpool

10:30 am Break

Session II – Functional Materials

11:00 am Introductory Remarks, T.R. Armstrong, Oak Ridge National Laboratory

— Gas Separation Materials

11:10 am *Development of Inorganic Membranes for Gas Separation*, R.R. Judkins, Oak Ridge National Laboratory

11:40 am *Efficient Production of Pure Hydrogen from Hydrocarbons Using Palladium Membrane Reactors*, S.A. Birdsell Los Alamos National Laboratory

12:10 pm Group Lunch

2:00 pm *Synthesis and Properties of Materials for Hydrogen Separation Membranes*, R. Carneim, Oak Ridge National Laboratory

2:30 pm *Corrosion Behavior of Stainless Steels in Solid Oxide Fuel Cell Simulated Gaseous Environments*, M. Ziomek-Moroz, Albany Research Center

— Materials for Gas Clean-up

3:00 pm *Development of Novel Activated Carbon Composites*, T.D. Burchell, Oak Ridge National Laboratory

3:30 pm Break

4:00 pm *Metallic Filters for Hot Gas Cleaning*, I.E. Anderson, Ames Laboratory

— Fuel Cell Materials Issues

4:30 pm *Development of Braze Sealing Technology for Use in High-Temperature Gas Separation Equipment*, S. Weil, Pacific Northwest National Laboratory

5:00 pm Invited Speaker: *Materials Issues in Alkaline Fuel Cells*, David Bloomfield, Analytic Energy Systems

5:30 pm Adjourn

Thursday, April 24

7:30 am Continental Breakfast

Session III – Breakthroughs in Materials Performance and Reliability

8:20 am Introductory Remarks

— Temperature Capabilities Beyond Current Alloys

8:30 am Invited Speaker: *Strategies for Strengthening at High Temperatures*, C-T. Liu, Oak Ridge National Laboratory

9:00 am Invited Speaker: *MoSiB Alloy Developments and Prospects*, D.M. Berczik, Pratt & Whithey

9:30 am *Mo-Si Alloy Development*, J.H. Schneibel, Oak Ridge National Laboratory

10:00 am Break

10:30 am *Novel Processing of Mo-Si-B Intermetallics for Improved Efficiency of Power Systems*, M.J. Kramer, Ames Laboratory

— Refractories for Increased Reliability in Gasification Reactors

11:00 am Invited Speaker: *Trends and Continuing Needs for Refractories for Gasifier Duty*, Speaker TBD

11:30 am *Improved Refractories for Slagging Gasifiers in IGCC Power Systems*, C.P. Dôgan, Albany Research Center

12:00 pm Lunch (On Your Own)

2:00 pm Invited Speaker: *Gas Turbine Compatibility Issues With Syngas*, Speaker TBD

— Smart Materials

2:30 pm Invited Speaker: *Concepts and Materials Needs for Condition-Monitoring Sensors*, J. Hardy, Oak Ridge National Laboratory

3:00 pm *Concepts for Smart, Protective High-Temperature Coatings*, P.F. Tortorelli, Oak Ridge National Laboratory

3:30 pm Closing Remarks

3:45 pm Adjourn

Posters, Tuesday, April 22nd

Coatings and Protection of Materials

Investigation of Iron Aluminide Weld Overlays, J.N. DuPont, Lehigh University

Coating Microstructure-Property Issues, R.N. Wright, Idaho National Engineering and Environmental Laboratory

Extended Lifetime Metallic Coatings, B.A. Pint, Oak Ridge National Laboratory

Aluminide Coatings for Power Generation Applications, Y. Zhang, Tennessee Technology University

Slurry-Based Mullite Coatings for Corrosion Resistance, B.L. Armstrong, Oak Ridge National Laboratory

Chemically Vapor Deposited YSZ for Thermal and Environmental Barrier Coatings, T.M. Besmann, Oak Ridge National Laboratory

Modeling of Chemically Vapor Deposited Zirconia for Thermal Barrier and Environmental Barrier Coatings, T. Starr, University of Louisville

Development of Nondestructive Evaluation Methods for Ceramic Coatings, W.A. Ellingson, Argonne National Laboratory

High Temperature Materials Testing in Coal Combustion Environments, M. Mathur and M. Freeman, U.S. Department of Energy, National Energy Technology Laboratory

New Alloys

Improved ODS Alloy for Heat Exchanger Tubing, G. Smith, Special Metals Corp.

High Creep-Strength Alloys, P.J. Maziasz, Oak Ridge National Laboratory

Oxidation- and Sulphidation-Resistant Materials, J.S. Dunning, Albany Research Center

Ultra-Supercritical Steam Corrosion, G.R. Holcomb, Albany Research Center

Corrosion in a Temperature Gradient, G.R. Holcomb, Albany Research Center

In-Plant Corrosion Probe Tests, J.L. Blough, Foster Wheeler Development Corporation

Functional Materials

Economical Fabrication of Membrane Materials, T.R. Armstrong, Oak Ridge National Laboratory

Hydrogen Permeability of Palladium-Copper Alloy Composite Membranes Over a Wide Range of Temperatures and Pressures, B.H. Howard, National Energy Technology Laboratory, Pittsburgh

Breakthroughs in Materials Performance and Reliability

High-Temperature Materials Testing in a Pilot-Scale Coal Combustion System, J. Hurley, University of North Dakota, Energy and Environmental Research Center

Evaluation of the Intrinsic and Extrinsic Fracture Behavior of Iron Aluminides, B.R. Cooper, West Virginia University

Multi-Phase Cr-Based Alloys for Aggressive High-Temperature Environments, M.P. Brady, Oak Ridge National Laboratory

Study of Fatigue and Fracture Behavior of Cr-Based Alloys and Intermetallic Materials, P. Liaw, University of Tennessee

Development of a Commercial Process for the Production of Silicon Carbide Fibrils, R.D. Nixdorf, ReMaxCo Technologies, Inc.